

garlic be not sufficiently broken. If the chopped grain could lie a considerable time, the garlic would dry, and it would grind much better.

But, although every precaution be taken, if there be much garlic in the wheat, the bran will not be well cleaned; besides which, there will be much coarse meal made, such as middlings, and stuff, which will require to be ground over again, in order to make the most profit of the grain; this I shall treat of in the next chapter.

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## CHAPTER XV.

### ARTICLE 113.

OF GRINDING THE MIDDINGS OVER, AND, IF NECESSARY, THE STUFF, AND BRAN OR SHORTS, TO MAKE THE MOST OF THEM.

ALTHOUGH we may grind the grain in the best manner we possibly can, so as to make any reasonable despatch, there yet will appear in the bolting, a species of coarse meal, called middlings, and stuff, a quality between superfine and shorts, which will contain a portion of the best part of the grain: but in this state they will make very coarse bread, and, consequently, will command but a low price. For this reason, it is oftentimes profitable to the miller to grind and bolt them over again, and to make them into superfine flour, and fine middlings; this may easily be done by proper management.

The middlings are generally hoisted by tubs, and laid in a convenient place on the floor, in the meal-loft, near the hopper-boy, until there is a large quantity gathered: when the first good opportunity offers, it is bolted over without any bran or shorts mixed with it, in order to take out all that is already fine enough to pass through the superfine cloth. The middlings will pass through the middlings' cloth, and will then be round and lively, and in a state fit for grinding, being freed

from the fine part that would have prevented it from feeding freely. The small specks of bran that were before mixed with it, being lighter than the rich round part, will not pass through the middlings' cloth, but will pass on to the stuff's cloth. The middlings will, by this means, be richer than before, and when made fine, may be mixed with the ground meal, and bolted into superfine flour.

The middlings may now be put into the hanging garner, over the hopper of the stones, out of which it will run into the hopper, and keep it full, as does the wheat, provided the garner be rightly constructed, and a hole about 6 by 6 inches be made for it to issue out at. There must be a rod put through the bar that supports the upper end of the damsel, the lower end of which must reach into the eye of the stone, near to the bottom, and on one side thereof, to prevent the meal from sticking in the eye, which, if it do, it will not feed. The hole in the bottom of the hopper must not be less than four inches square. Things being thus prepared, and the stones being sharp and clean, and nicely hung, draw a small quantity of water, (for meal does not require above one-tenth part that grain does) taking great care to avoid pressure, because the bran is not now between the stones, to prevent their coming too closely together. If you lay on as much weight as when grinding grain, the flour will be killed; but if the stones be well hung, and it be pressed lightly, the flour will be lively, and will make much better bread, without being bolted, than it would before it was ground. As fast as it is ground, it may be elevated and bolted; but a little bran will now be necessary to keep the cloth open; and all that passes through the superfine cloth in this operation, may be mixed with what passed through in the first bolting of the middlings, and be hoisted up, and mixed (by the hopper-boy) regularly with the ground meal, and bolted into superfine flour, as directed Art. 89.\*

\* All this trouble and loss of time may be saved by a little simple machinery; namely: As the middlings fall by the first bolting, let them be conveyed into the eye of the stone, and ground with the wheat, as directed Art. 89, Plate VIII; by which means, the whole thereof may be made into superfine flour, without any

The stuff, which is a degree coarser than middlings, if it be too poor for ship bread, and too rich to feed cattle on, is to be ground over in the same manner as the middlings. But if it be mixed with fine flour, (as it sometimes is,) so that it will not feed freely, it must be bolted over first; this will take out the fine flour, and, also the fine specks of bran, which, being lightest, will come through the cloth last. When it is bolted, the part that passes through the middlings' and stuff's parts of the cloth, are to be mixed and ground together; by this means the rich particles will be reduced to flour, and, when bolted, will pass through the finer cloths, and will make tolerably good bread. What passes through the middlings' cloth will make but indifferent ship-bread, and what passes through the ship-stuff's cloth, will be what is called brown-stuff, roughings, or horse-feed.

The bran and shorts seldom are worth the trouble of grinding over, unless the stones have been very dull, or the grinding been but slightly performed, or the wheat very garlicky. When it is done, the stones must be very sharp, and more water and pressure are required, than in grinding grain. The flour, thus obtained, is generally of an indifferent quality, being made of that part of the grain that lies next the skin, and a great part of it is the skin itself, cut fine.\*

loss of time, or danger of being too hard pressed for want of the bran, to keep the stones apart. This mode I first introduced, and several others have since adopted it.

\*The merchant miller is to consider, that there is a certain degree of closeness or perfection that he is to aim at in manufacturing, which will yield him the greatest profit possible, in a given time. And this degree of care and perfection will vary with the prices of wheat and flour, so that what would yield the greatest profit at one time, would sink money at another; because, if the difference in the price of wheat and of flour be but little, then we must make the grain yield as much as possible, to obtain any profit. But if the price of flour be much above that of the wheat, then we had best make the greatest despatch, even if we should not do it so well, in order that the greater quantity may be done while these prices last; whereas, if we were to make such a despatch when the price of flour was but little above that of wheat, we should sink money.